

# CHAPTER 4

## Affected Environment

### 4.1 INTRODUCTION

Understanding the affected environment is necessary for understanding potential impacts from operations at Sandia National Laboratories, California (SNL/CA). This chapter describes the existing conditions that comprise the physical and natural environment within SNL/CA, the Region of Influence (ROI), and the relationship of people with that environment. Descriptions of the affected environment provide a framework for understanding the direct, indirect, and cumulative effects of each of the three alternatives. The discussion is categorized by resource area to ensure that all relevant issues are included. This chapter is divided into the following thirteen resource areas that support the impact assessment discussed in Chapter 5:

- Land Use and Visual Resources
- Geology and Soils
- Water Resources and Hydrology
- Biological Resources
- Cultural Resources
- Air Quality
- Infrastructure
- Transportation
- Waste Generation
- Noise
- Human Health and Worker Safety
- Socioeconomics
- Environmental Justice

The information in this chapter comes primarily from the SNL/CA *Environmental Information Document* (EID) (SNL/CA 2002a) and from the comprehensive environmental monitoring and surveillance programs that the United States (U.S.) Department of Energy (DOE) maintains at SNL/CA. Data for 2000 are presented where available; data for 1996, 1997, 1998, and 1999 are also included where necessary to present trends. Other relevant information is summarized and incorporated by reference.

Each resource and topic area includes a discussion of the ROI—the area that may be affected by SNL/CA operations. The ROI establishes the scope of analysis and focuses the discussion on relevant information. Because resources and topic areas are often interrelated, one section may refer to another.

### Regions of Influence

Each ROI—the area that SNL/CA operations may reasonably affect—is delineated by its resource. ROIs are determined based on characteristics of SNL/CA and the surrounding area. The ROI limits may be natural features or political boundaries. Other ROIs are delineated using industry-accepted norms for the resources.

Materials released from SNL/CA can reach the environment and people in a number of ways. The routes that materials follow from SNL/CA to reach the environment and subsequently people are called transport and exposure pathways. SNL/CA conducts environmental monitoring to determine whether radioactive and nonradioactive materials were potentially released into the environment. Environmental monitoring also assesses the potential for people to encounter these materials by any route of exposure. Sampled media include ground-water, storm water runoff, and wastewater discharge. SNL/CA publishes an annual site environmental report that contains details on these sampling programs (SNL 1996a, 1997a, 1998a, 1999a, 2000a).

### 4.2 GENERAL LOCATION

SNL/CA is located about 40 miles (mi) east of San Francisco at the southeast end of the Livermore Valley in eastern Alameda County. The City of Livermore's central business district is located about 3 mi to the west. SNL/CA occupies a 410-acre site adjacent to and south of Lawrence Livermore National Laboratory (LLNL).

### 4.3 LAND USE AND VISUAL RESOURCES

#### 4.3.1 LAND USE

##### 4.3.1.1 Definition of Resource

Land use describes the condition of a particular area and the activities that take place in that area. It is a critical element in site operations decision-making, especially when determining the feasibility of siting new programs and facilities at SNL/CA, and identifying conflicts between existing or projected operations and the potential for new operations. DOE Policy 430.1, *DOE Land Use and Facility Policy* (DOE P 430.1), governs DOE's management of its land and facilities, based on the principles of ecosystem management and sustainable development.